CLAIMS:

1. A method comprising:

receiving a request via a network layer device for a multimedia service from a subscriber device; and

dynamically configuring a control object stored by a data link layer device with the network layer device to control the data link layer device to provide data link layer functionality in accordance with the request.

2. The method of claim 1, wherein receiving a request for a multimedia service comprises receiving a multicasting protocol message from the subscriber device, and dynamically configuring a control object comprises dynamically configuring multicast filter information stored by the data link layer device to control the data link layer device to perform multicast elaboration in accordance with the multicasting protocol message.

3. The method of claim 2, wherein the multicasting protocol message identifies a multicast stream, the method further comprising:

associating the multicast stream with one of a virtual circuit, virtual local area network, and an address; and

encapsulating and forwarding packets for the multicast stream to the data link layer device in accordance with the association,

wherein dynamically configuring a multicast filtering table comprises dynamically configuring the multicast filtering table to associate the one of a virtual circuit, virtual local area network, and an address that is associated with the multicast stream with one of a virtual circuit and an address that is associated with the subscriber device.

4. The method of claim 2, the method further comprising:

receiving a plurality of multicast protocol messages;

replicating a multicast stream for the data link layer device to produce a copy of the multicast stream; and

forwarding the copy of the multicast stream to the data link layer device,

wherein dynamically configuring a multicast filtering table comprises dynamically configuring the multicast filtering table to cause the data link layer device to replicate the copy of the multicast stream for each of a plurality of subscriber devices in accordance with the multicast protocol messages.

5. The method of claim 2, wherein the multicast protocol message requests a multicast stream, the method further comprising:

maintaining information that identifies multicast streams as one of premium and non-premium; and

determining whether the requested multicast stream is a premium multicast stream,

wherein dynamically configuring a multicast filtering table comprises dynamically configuring the multicast filtering table stored by the data link layer device based on the determination.

6. The method of claim 5, further comprising:

replicating the requested multicast stream at the network layer device on a per data link layer device basis when the requested multicast stream is a premium multicast stream; and

replicating the requested multicast stream on at the network layer device on a per subscriber basis when the requested multicast stream is a non-premium multicast stream.

7. The method of claim 1, wherein receiving a request for a multimedia service comprises receiving a request for transmission of packets according to a quality of service class for a unicast packet flow from the subscriber device,

wherein dynamically configuring a control object comprises dynamically configuring a quality of service profile for a layer-2 link between the data link layer device and the subscriber device that is stored by the data link layer device, and

wherein the data link layer device forwards packets for the subscriber device via the layer-2 link according to the quality of service profile to facilitate packet transmission according to the requested quality of service class.

8. The method of claim 7, wherein the unicast packet flow comprises a packet flow for a voice over Internet Protocol call that specifies the subscriber device.

9. The method of claim 7, wherein dynamically configuring a quality of service profile comprises controlling the data link layer device to provide preferential queuing of packets of the packet flow based on the requested quality of service class.

10. The method of claim 1, wherein receiving a request for a multimedia service comprises receiving a request for activation of a multimedia service account of the subscriber device, and

wherein dynamically configuring a control object comprises:

querying a server for information relating to a service profile that is associated with the subscriber device; and

dynamically configuring a quality of service profile for a layer-2 link between the data link layer device and the subscriber device that is stored by the data link layer device to control the data link layer device to facilitate packet transmission for the subscriber device via the layer-2 link in accordance with the service profile.

11. The method of claim 10, wherein receiving a request for activation of an account comprises receiving a message indicating physical connection of a customer premises equipment device to a network.

12. The method of claim 1, wherein dynamically configuring a control object stored by a data link layer device comprises sending a control message from the network layer device to the data link layer device.

13. The method of claim 12, wherein sending a control message comprises sending the control message via one of a virtual circuit and a virtual local area network that are reserved for transmission of the control message.

14. The method of claim 12, wherein sending a control message comprises sending an in-band Internet Protocol message.

15. The method of claim 1, wherein the data link layer device comprises one of a switch, an access multiplexer, and a customer premises equipment device.

16. The method of claim 1, wherein the network layer device is a service edge router.

17. The method of claim 16, wherein the service edge router comprises a broadband remote access server.

18. A network layer device comprising a control unit that receives a request for a multimedia service from a subscriber device, and dynamically configures a control object stored by a data link layer device to control the data link layer device to provide data link layer functionality in accordance with the request.

19. The network layer device of claim 18, wherein the control unit receives a multicasting protocol message from the subscriber device, and dynamically configures multicast filter information stored by the data link layer device to control the data link layer device to perform multicast elaboration in accordance with the multicast protocol message.

20. The network layer device of claim 19, wherein the multicasting protocol message identifies a multicast stream, and the control unit associates the multicast stream with one of a virtual circuit, a virtual local area network, and an address, forwards packets for the multicast stream to the data link layer device in accordance with the association, and dynamically configures the multicast filtering table to associate the one of a virtual circuit, virtual local area network, and an address that is associated with the multicast stream with one of a virtual circuit, and an address that is associated with the subscriber device.

21. The network layer device of claim 19, wherein the control unit receives a plurality of multicast protocol messages, replicates a multicast stream to produce a copy of the multicast stream, forwards the copy of the multicast stream to the data link layer device, and dyanmically configures the multicast filter information to cause the data link layer device to replicate the copy for each of a plurality of subscriber devices in accordance with the multicast protocol messages.

22. The network layer device of claim 19, wherein the multicast protocol message requests a multicast stream, and the control unit maintains information that identifies multicast streams as one of premium and non-premium, determines whether the requested multicast stream is a premium stream, and dynamically configures the multicast filter information stored by the data link layer device based on the determination.

23. The network layer device of claim 22, wherein the control unit replicates the requested multicast stream on a per data link layer device basis when the requested multicast stream is a premium multicast stream, and replicates the requested multicast stream on a per subscriber basis when the requested multicast stream is a non-premium multicast stream.

24. The network layer device of claim 18, wherein the control unit receives a request for transmission of packets according to a quality of service class for a unicast packet flow from a subscriber device associated with the subscriber, and dynamically configures a quality of service profile for a layer-2 link between the data link layer device and the subscriber device that is stored by the data link layer device to control the data link layer device to facilitate packet transmission for the subscriber device via the layer-2 link according to the requested quality of service class.

25. The network layer device of claim 24, wherein the unicast packet flow comprises a packet flow for a voice over Internet Protocol call that includes the subscriber device.

26. The network layer device of claim 24, wherein the control unit dynamically configures the quality of service profile to control the data link layer device to provide preferential queuing of packets of the packet flow based on the requested quality of service class.

27. The network layer device of claim 18, wherein the control unit detects activation of an multimedia service account of the subscriber device, queries a server for information relating to a service profile that is associated with the subscriber device, and dynamically configures a quality of service profile for a layer-2 link between the data link layer device and the subscriber device that is stored by the data link layer device to control the data link layer device to facilitate packet transmission for the subscriber device via the layer-2 link in accordance with the service profile.

28. The network layer device of claim 27, wherein the control unit detects activation of the account by receiving a message indicating physical connection of a customer premises equipment device to a network.

29. The network layer device of claim 18, wherein the control unit sends a control message to the data link layer device to dynamically configure the control object stored by the data link layer device.

30. The network layer device of claim 29, wherein the control unit sends the control message via one of a virtual circuit and a virtual local area network that are reserved for transmission of the control message.

31. The network layer device of claim 18, wherein the data link layer device comprises one of a switch, an access multiplexer, and a customer premises equipment device, and the network layer device comprises a provider service edge router.

32. The network layer device of claim 16, wherein the network layer device comprises a broadband remote access server.

33. A computer-readable medium comprising instructions that cause a programmable processor to:

receive a request for a multimedia service from a subscriber device; and

dynamically configure a control object stored by a data link layer device to control the data link layer device to provide data link layer functionality in accordance with the request.

34. The computer-readable medium of claim 33, wherein the instructions that cause a programmable processor to receive a request for network layer functionality comprise instructions that cause a programmable processor to receive a multicasting protocol message from the subscriber device, and

wherein the instructions that cause a programmable processor to dynamically configure a control object comprise instructions that cause a programmable processor dynamically configure multicast filter information stored by the data link layer device to control the data link layer device to perform multicast elaboration in accordance with the multicast protocol message.

35. The computer-readable medium of claim 34, wherein the multicasting protocol message identifies a multicast stream, the medium further comprising instructions that cause a programmable processor to:

associate the multicast stream with one of a virtual circuit, virtual local area network, and an address; and

forward packets for the multicast stream to the data link layer device, the packets encapsulated according to the associated one of the virtual circuit, virtual local area network, and address,

wherein the instructions that cause a programmable processor to dynamically configure a multicast filtering table comprise instructions that cause a programmable processor to associate the one of a virtual circuit, virtual local area network, and an address that is associated with the multicast stream with one of a virtual circuit and an address that is associated with the subscriber device.

36. The computer-readable medium of claim 34, wherein the multicasting protocol message identifies a multicast stream, the medium further comprising instructions that cause a programmable processor to:

maintain information that identifies multicast streams as one of premium and non-premium; and

determine whether the requested multicast stream is a premium multicast stream,

wherein the instructions that cause a programmable processor to dynamically configure a multicast filtering table comprise instructions that cause a programmable processor to dynamically configure the multicast filtering table based on the determination.

37. The computer-readable medium of claim 36, further comprising instructions that cause a programmable processor to:

replicate the requested multicast stream at the network layer device on a per data link layer device basis when the requested multicast stream is a premium multicast stream; and

replicate the requested multicast stream at the network layer device on a per subscriber basis when the requested multicast stream is a non-premium multicast stream.

38. The computer-readable medium of claim 33, wherein the instructions that cause a programmable processor to receive a request for a multimedia service comprise instructions that cause a programmable processor to receive a request for transmission of packets according to a quality of service class for a unicast packet flow from a subscriber device associated with the subscriber, and

wherein the instructions that cause a programmable processor to dynamically configure a control object comprise instructions that cause a programmable processor to dynamically configure a quality of service profile for a layer-2 link between the data link layer device and the subscriber device that is stored by the data link layer device to control the data link layer device to facilitate packet transmission for the subscriber device via the layer-2 link according to the requested quality of service class.

39. The computer-readable medium of claim 38, wherein the unicast packet flow comprises a packet flow for a voice over Internet Protocol call that includes the subscriber device.

40. The computer-readable medium of claim 38, wherein the instructions that cause a programmable processor to dynamically configure a quality of service profile comprise instructions that cause a programmable processor to control the data link layer device to provide preferential queuing of packets of the packet flow based on the requested quality of service class.

41. The computer-readable medium of claim 33, wherein the instructions that cause a programmable processor to receive a request for a multimedia service comprise instructions that cause a programmable processor to detect activation of a multimedia service account of the subscriber device, and

wherein the instructions that cause a programmable processor to dynamically configure control object stored by a data link layer device comprise instructions that cause a programmable processor to:

query a server for information relating to a service profile that is associated with the subscriber device; and

dynamically configure a quality of service profile for a layer-2 link between the data link layer device and the subscriber device that is stored by the data link layer device to control the data link layer device to facilitate packet transmission via the layer-2 link for the subscriber device in accordance with the service profile.

42. The computer-readable medium of claim 40, wherein the instructions that cause a programmable processor to detect activation of an account comprise instructions that cause a programmable processor to receive a message indicating physical connection of a customer premises equipment device to a network.

43. The computer-readable medium of claim 33, wherein the instructions that cause a programmable processor to dynamically configure a control object stored by a data link layer device comprises instructions that cause a programmable processor to send a control message from a network layer device to the data link layer device.

44. A method comprising:

storing a control object;

receiving a control message from a network layer device, the control message sent by the network layer device in response to a request for a multimedia service sent from a subscriber device to the network layer device;

dynamically configuring the control object based on the control message; and

providing data link layer functionality in accordance with the requested multimedia service based on the configuration of the control object.

45. The method of claim 44, wherein the control object comprises a multicast filtering table, the request comprises a multicast protocol message sent from the subscriber device, and providing data link layer functionality comprises performing multicast elaboration in accordance with a multicast protocol message based on the configuration of the multicast filtering table.

46. The method of claim 45, wherein the control message identifies the subscriber device, and one of a virtual circuit, virtual local area network, and an address associated with a multicast stream identified to the network device by the multicast protocol message, and dynamically configuring the multicast filtering table based on the control message comprises associating one of a virtual circuit and an address associated with the subscriber device with the one of a virtual circuit, virtual local area network, and an address associated with the multicast stream, the method further comprising:

receiving packets for the multicast stream from the network layer device encapsulated according to the one of the virtual circuit, virtual local area network, and address associated with the multicast stream; and

forwarding the packets for the multicast stream to the subscriber device encapsulated according to the one of a virtual circuit and address associated with the subscriber device.

47. The method of claim 44, wherein the control message includes quality of service information, the control object comprises a quality of service profile for a layer-2 link between the data link layer device and the subscriber device, dynamically configuring the control object comprises dynamically configuring the quality of service profile based on the quality of service information, and providing data link layer functionality comprises transmitting packets for the subscriber device via the layer-2 link according to the quality of service information.

48. The method of claim 47, wherein the request for a multimedia service comprises a request for a quality of service class for a unicast packet flow, and transmitting packets for the subscriber device comprises transmitting packets for the unicast packet flow according to the requested quality of service class.

49. The method of claim 48, wherein the unicast packet flow comprises a packet flow for a voice over Internet Protocol call that includes the subscriber device.

50. The method of claim 47, wherein transmitting packets comprises providing preferential queuing of packets of the packet flow based on the quality of service information.

51. The method of claim 44, wherein the network layer device is a service edge router, and the data link layer device comprises one of a switch, an access multiplexer, and a customer premises equipment device.

52. The method of claim 42, wherein network layer device comprises a broadband remote access server.

53. A data link layer device, comprising a control unit to receive a control message from a network layer device, the control message sent by the network layer device in response to a request for a multimedia service sent from a subscriber device to the network layer device, dynamically configure the control object based on the control message, and provide data link layer functionality in accordance with the requested multimedia service based on the configuration of the control object.

54. The data link layer device of claim 53, wherein the request for a multimedia service comprises a multicast protocol message sent from the subscriber device to the network device, the control object comprises a multicast filtering table, and the control unit performs multicast elaboration in accordance with the multicast protocol message based on the configuration of the multicast filtering table.

55. The data link layer device of claim 54, wherein the control message identifies the subscriber device, and one of a virtual circuit, virtual local area network, tunneling protocol tunnel, and an address associated with a multicast stream identified to the network layer device by the multicast protocol message, and wherein the control unit dynamically configures the multicast filtering table by associating one of a virtual circuit and an address associated with the subscriber device with the one of a virtual circuit, virtual local area network, and an address associated with the stream, receives packets of the multicast stream from the network layer device, the packets encapsulated according to the one of the virtual circuit, virtual local area network, and address associated with the multicast stream, and forwards the packets of the multicast stream to the subscriber device encapsulated according to the one of a virtual circuit and address associated with the subscriber device.

56. The data link layer device of claim 53, wherein the control message includes quality of service information, the control object comprises a quality of service profile for a layer-2 link between the data link layer device and the subscriber device, and

wherein the control unit dynamically configures the quality of service profile based on the quality of service information, and provides data link layer functionality by transmitting packets for the subscriber device via the layer-2 link according the quality of service information.

57. The data link layer device of claim 56, wherein the request for a multimedia service comprises a request for a quality of service class for a unicast packet flow, and the control unit transmits packets for the unicast packet flow according to the requested quality of service class.

58. The data link layer device of claim 57, wherein the unicast packet flow comprises a packet flow for a voice over Internet Protocol call that includes the subscriber device.

59. The data link layer device of claim 56, wherein the control unit provides preferential queuing of packets of the packet flow based on the quality of service information.

60. The data link layer device of claim 53, wherein the network layer device is a service edge router, and the data link layer device comprises one of a switch, an access multiplexer, and a customer premises equipment device.

61. The data link layer device of claim 53, wherein the network layer device comprises a broadband remote access server.

62. A computer-readable medium comprising instructions that cause a programmable processor to:

store a control object;

receive a control message from a network layer device, the control message sent by the network layer device in response to a request for a multimedia service sent from a subscriber device to the network layer device;

dynamically configure the control object based on the control message; and

provide data link layer functionality in accordance with the requested multimedia service based on the configuration of the control object.

63. The computer-readable medium of claim 62, wherein the control object comprises a multicast filtering table, the request comprises a multicast protocol message, and the instructions that cause a programmable processor to provide data link layer functionality comprise instructions that cause a programmable processor to perform multicast elaboration in accordance with the multicast protocol message based on the configuration of the multicast filtering table.

64. The computer-readable medium of claim 63, wherein the control message identifies the subscriber device, and one of a virtual circuit, virtual local area network, and an address associated with a multicast stream identified to the network layer device by the multicast protocol message, and wherein the instructions that cause a programmable processor to dynamically configure the multicast filtering table comprise instructions that cause a programmable processor to associate the one of a virtual circuit and an address associated with the subscriber device with the one of a virtual circuit, virtual local area network, and an address associated with the stream, the medium further comprising instructions that cause a programmable processor to:

receive packets for the multicast stream from the network layer device encapsulated according to the one of the virtual circuit, virtual local area network, and address associated with the multicast stream; and

forward the packets of the multicast stream to the subscriber device encapsulated according to the one of a virtual circuit and address associated with the subscriber device.

65. The computer-readable medium of claim 62, wherein the control message includes quality of service information and the control object comprises a quality of service profile for a layer-2 link between the data link layer device and the subscriber device,

wherein the instructions that cause a programmable processor to dynamically configure the control object comprises instructions that cause a programmable processor to dynamically configure the control object based on the quality of service information, and

wherein the instructions that cause a programmable processor to provide data link layer functionality comprise instructions that cause a programmable processor to transmit packets for the subscriber device via the layer-2 link according the quality of service information.

66. The computer-readable medium of claim 65, wherein the request for a multimedia service comprises a request for a quality of service class for a unicast packet flow, and the instructions that cause a programmable processor to transmit packets for the subscriber device comprise instructions that cause a programmable processor to transmit packets for the unicast packet flow according to the requested quality of service class.

67. A system comprising:

a network layer device that receives a multicasting protocol message identifying a multicast stream from a subscriber device; and

a data link layer device that receives the multicast stream from the network layer device, and replicates and forwards the multicast stream to the subscriber device under the control of the network layer device.

68. The system of claim 67, wherein the data link layer device stores multicast filter information, the network layer device sends a control message to the data link layer device to cause the data link layer device to dynamically configure the multicast filter information in accordance with the multicasting protocol message, and the data link layer device replicates and forwards the multicast stream based on the configuration of the multicast filter information.

69. The system of claim 67, wherein the network layer device maintains information that classifies multicast streams as one of premium and non-premium, determines whether the multicast stream identified by the multicast protocol message is a premium multicast stream, and controls the data link layer device to replicate and forward the multicast stream based on the determination.

70. The system of claim 69, wherein the network layer device controls the data link layer device to replicate and forward the multicast stream on a per subscriber basis when the requested multicast stream is a premium multicast stream, and the network layer device replicates the multicast stream on a per subscriber basis when the requested multicast stream is a non-premium multicast stream.

71. The system of claim 67, wherein the data link layer device comprises one of a switch, access multiplexer, and a customer premises equipment device, and the network layer device comprises a service edge router.

72. The system of claim 71, wherein the data link layer device comprises a digital subscriber line access multiplexer.

73. The system of claim 67, wherein the service edge router comprises a broadband remote access server.

74. A method comprising:

maintaining classification information for multicast streams within a network layer device; and

dynamically configuring multicast filter information stored by a data link layer device based on the classification information.

75. The method of claim 74, wherein maintaining classification information comprises maintaining information classifying multicast streams as one of premium and non-premium, the method further comprising:

receiving a multicast protocol message identifying a multicast stream from a subscriber device; and

determining whether the identified multicast stream is a premium multicast stream,

wherein dynamically configuring multicast filter information comprises dynamically configuring the table based on the determination.

76. The method of claim 75, further comprising:

replicating the requested multicast stream at the network layer device on a per data link layer device basis when the requested multicast stream is a premium multicast stream; and

replicating the requested multicast stream on at the network layer device on a per subscriber basis when the requested multicast stream is a non-premium multicast stream.

77. The method of claim 74, wherein the network layer device comprises a service edge router, and the data link layer device comprises a switch.

78. A network layer device comprising a control unit to maintain classification information for multicast streams, and dynamically configure multicast filter information stored by a data link layer device based on the classification information.

79. The network layer device of claim 78, wherein the control unit maintains information classifying multicast streams as one of premium and non-premium, receives a multicast protocol message identifying a multicast stream from a subscriber device, determines whether the identified multicast stream is a premium multicast stream, and dynamically configures the multicast filter information stored by the data link layer device based on the determination.

80. The network layer device of claim 79, wherein the control unit replicates the requested multicast stream on a per data link layer device basis when the requested multicast stream is a premium multicast stream; and replicates the requested multicast stream on a per subscriber basis when the requested multicast stream is a non-premium multicast stream.

81. The network layer device of claim 78, wherein the network layer device comprises a service edge router, and the data link layer device comprises a switch.

82. A method comprising:

storing a quality of service profile associated with a subscriber within a network layer device; and

dynamically configuring a quality of service profile for a layer-2 link between a data link layer device and a subscriber device associated with the subscriber based on the quality of service profile associated with the subscriber, the quality of service profile for the layer-2 link stored by a data link layer device.

83. The method of claim 82, wherein dynamically configuring a quality of service profile for a layer-2 link comprises controlling the data link layer device to forward packets for the subscriber device on the layer-2 link according to the quality of service profile for the layer-2 link.

84. The method of claim 82, further comprising receiving a request for a quality of service class for a unicast packet flow from the subscriber device, wherein dynamically configuring the quality of service profile associated with the layer-2 link comprises dynamically configuring the quality of service profile to control the data link layer device to forward packets for the unicast packet flow on the layer-2 link according to the requested quality of service class.

85. The method of claim 84, wherein the unicast packet flow comprises a voice over Internet Protocol call from the subscriber device.

86. The method of claim 82, wherein the network layer device comprises a service edge router, and the data link layer device comprises one of a switch and a customer premises equipment device.

87. A network layer device comprising a control unit to store quality of service information associated with a subscriber, and dynamically configure a quality of service profile for a layer-2 link between a data link layer device and a subscriber device associated with the subscriber based on the quality of service profile associated with the subscriber, the quality of service profile for the layer-2 link stored by a data link layer device.

88. The network layer device of claim 87, wherein the control unit dynamically configures the quality of service profile for the layer-2 link to control packet forwarding by the data link layer device for the subscriber device on the layer-2 link.

89. The network layer device of claim 87, wherein the control unit receives a request for a quality of service class for a unicast packet flow from the subscriber device, and dynamically configures the quality of service profile to control the data link layer device to forward packets for the unicast packet flow on the layer-2 link according to the requested quality of service class.

90. The network layer device of claim 89, wherein the unicast packet flow comprises a voice over Internet Protocol call from the subscriber device.

91. The network layer device of claim 87, wherein the network layer device comprises a service edge router, and the data link layer device comprises one of a switch and a customer premises equipment device.

92. The network layer device of claim 86, wherein the service edge router comprises a broadband remote access server.